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Abstract

Institutional theory has been applied to various dimensions of extant IS literature. The major part of this literature, however, is dedicated to studying the influence of institutional isomorphic mechanisms at macro level in bringing legitimacy to organisational structure through IT/IS adoption, development, and use. The influences of micro activities and the interplay between macro and micro activities in bringing success and efficiency to the institutionalisation process have been given little attention. This paper utilises the institutional logics concept to identify existing gaps in institutional theory. The proposed framework aims to fill these gaps by utilising institutional theory in conjunction with technology-organisation-environment (TOE) framework. This paper concludes with an illustrative case study of a utility organisation in Australia to show how suitable management of interactions between macro and micro institutional logics through various stages of ERP institutionalisation helped this organisation to experience success and performance, in addition to legitimacy.

Keywords

Institutional Theory, Institutional Effects, Institutional Logics, Technology Institutionalisation.

INTRODUCTION

Contemporary business organisations are evolving through the mutual interactions of various organisational sub-institutions such as internal culture, social structure, regulatory agencies, and competitors. Information technologies (IT), in particular information systems (IS), work as binding factors that shape organisations by integrating these various sub-institutions (Scott 2008; Currie 2011; Alter 2013). Any technology (in this research enterprise resource planning (ERP) systems), thus, can be used as an institution and implemented by an organisation (Avgerou 2000; Orlikowski and Barley 2001; Greenwood *et al.* 2008; Pollock and Williams 2008). In recent years, a number of studies have adopted institutional theory to study IT/IS phenomena (Teo *et al.* 2003; Liang *et al.* 2007; Mignerat and Rivard 2009; Zheng *et al.* 2013; Saraf *et al.* 2013). However, a major part of this literature is dedicated to studying the influence of institutional isomorphic mechanisms (i.e., coercive, normative and mimetic) at macro level in bringing legitimacy to organisational structure through IT/IS adoption,

development, and use. The influences of micro activities and the interplay between macro and micro logics and activities in bringing success and efficiency to institutionalisation process have been given little attention. Hence, exploring various institutional mechanisms underlying IT/IS assimilation and institutionalisation process at both macro and micro levels of institutional theory suggest more fertile avenues for IS research outside of the dominant paradigm. To this end, this paper provides an in-depth review of literature on the use and function of institutional theory in IT/IS adoption and assimilation. Existing gaps in institutional theory are clarified and the research framework for addressing these gaps is elaborated. This framework contributes to IS literature by embracing multi-level analysis (macro and micro level) to avoid the criticism about paying disproportionate attention to institutional effects (Friedland and Alford 1991; Thornton *et al.* 2012). This framework extends the influence of institutional theory on technology implementation from achieving legitimacy to proposing more successful, efficient and beneficial results. The methodology for conducting this research is explained, followed by an illustrative case study of an organisation in Australia. This case aims to show how suitable management of interactions between environmental institutional mechanisms at macro level and micro organisational and technological institutional logics help this organisation to experience legitimacy, success, efficiency and performance. Finally, conclusions and future roadmap for doing this research are discussed.

INSTITUTIONAL THEORY

Institutional theory has been applied to various dimensions of technology management paradigm in contemporary IS literature such as IT/IS development and implementation, and IT adoption and use (e.g., Teo *et al.* 2003; Grimshaw and Miozzo 2006; Greenwood *et al.* 2008; Pollock and Williams 2008; Mignerat and Rivard 2009; Lawrence *et al.* 2011; Zhu *et al.* 2013). According to institutional theory, actors accept and follow social norms unquestioningly, without any real reflection (Tolbert and Zucker 1999, p. 176) and seek legitimacy, status and reputation (Barley 2008; Deephouse and Suchman 2008) more than efficiency (Thornton and Ocasio 2008). Institutional theory, therefore, primarily assumes that organisations and organisational actors seek to gain legitimacy in their environments in order to be accepted and thus ensure their long-term survival (Barley 2008).

This theory comprises of two elements: institutional effects and institutionalisation process (Mignerat and Rivard 2009). Institutional effects are processes in which institutions affect other institutions, organisations or organisational entities. According to institutional effects, the relationship of an organisation within its institutional environment causes some set of organisations to become more similar over time through resemblance of a focal organisation to other organisations in its environment (DiMaggio and Powell 1983; Liang *et al.* 2007; Greenwood *et al.* 2008). Different researchers utilised various terms to explain this process such as institutional isomorphic pressures, institutional mechanisms, and institutional pressures (Powell and DiMaggio 1991; Scott 2008; Currie 2011). This research, however, uses the term ‘environmental institutional mechanisms’ for explaining this process, since organisations and organisational actors seek to gain legitimacy in their environments and the optimal fit with their environment in order to be accepted and ensure their long-term survival (Greenwood *et al.* 2008; Scott 2008). DiMaggio and Powell (1983) introduced three sources of institutional effects (i.e., coercive, normative, and mimetic) to explain how archetypes become similar over time. Coercive mechanisms arise from the legal environment of the organisation. It occurs through the formal and informal pressures which can be imposed by structures upon which the focal organisation is dependent such as governmental agencies or headquarters. Normative mechanisms mostly concern the moral and pragmatic aspects of legitimacy by assessing whether the organisation plays its role correctly and in a desirable way. Finally, mimetic mechanisms can be defined as rational or ritualistic imitation of a superior organisation. Organisations pursue mimetic behaviour to achieve legitimacy, maintain competitive parity or limit rivalry. The influence of these environmental institutional mechanisms (at macro level) on an organisation’s choice of IT/IS innovations has been elaborated significantly in extant IS literature (e.g., Teo *et al.* 2003; Swanson and Ramiller 2004; Grimshaw and Miozzo 2006; Liang *et al.* 2007; Greenwood *et al.* 2008; Barley 2008; Deephouse and Suchman 2008; Mignerat and Rivard 2009; Currie 2011; Zhu *et al.* 2013; Saraf *et al.* 2013; Zheng *et al.* 2013). However, contemporary debates in the literature about ‘micro’ activities in institutionalism such as agency, materiality and contingency (Friedland and Alford 1991; Orlikowski 2007; Thornton and Ocasio 2008; Pollock and Williams 2008; Thornton *et al.* 2012) open up new ways to look at organisations through the lens of institutional theory which will be elaborated later in this paper.

Institutionalisation process is another element examined in institutional theory. This process argues that institutions (such as technological innovations) do not emerge in a vacuum; instead they are created, sustained, and reproduced by individuals through their everyday activities in various social settings (Orlikowski 2007; Mignerat and Rivard 2009). Most researchers agree that institutionalisation process occurs along some S-shaped curve that characterises most diffusion paths. This S-shaped curve is defined by a relatively fixed sequence that involves a period of time in which an innovation emerges and is diffused, and then a period in which the innovation remains institutionalised (Tolbert and Zucker 1999; Rogers 2003; Jennings and Greenwood 2003; Baptista 2009). Since researchers typically study the process of technology adoption, implementation and

assimilation, technology institutionalisation is a recent phenomenon. It is the result of fully assimilated and integrated technology which occurs when technology usage becomes stable, routinised and embedded within the organisation's work processes and its value chain activities. It is similar to institutionalisation stage of the institutionalisation process suggested by Jennings and Greenwood (2003) or sedimentation stage suggested by Tolbert and Zucker (1999). Institutionalised technology becomes ingrained and absorbed into the work life of the organisation. Therefore, in the normal progression of events, the technology is first implemented, then assimilated, and once its usage becomes routinised and embedded within the organisations' work processes and value chain activities, its use will be taken for granted by the organisational stakeholders and system users (Tolbert and Zucker 1999; Rogers 2003; Baptista 2009). This taken-for-grantedness represents the institutionalisation of the technology.

In this research, the interplay and interrelationships of various micro and macro institutional logics will be elaborated in the context of ERP assimilation and institutionalisation process. As stated, institutionalisation is a result of fully assimilated and integrated technology. Assimilation process itself extends from initial awareness to full utilisation and usage of technology within organisations which embody the pre-implementation, implementation, and post-implementation stages (see for example, Fichman and Kemerer 1997; Chatterjee *et al.* 2002; Rogers 2003; Swanson and Ramiller 2004; Bajwa *et al.* 2004; Zhu *et al.* 2006; Liang *et al.* 2007). Looking at the temporal relationship of these stages, implementation (physical installation) takes between one to three years (21 months on average), with benefits starting to accrue in an average of 31 months (post-implementation stage) (Chatterjee *et al.* 2002; Liang *et al.* 2007; Saraf *et al.* 2013). In fact, the literature suggests about five to six years for an ERP module to become completely ingrained and routinised. It is, however, noteworthy that the nature of ERP implementation is iterative and not all the modules go-live at once. Therefore, this approximate temporal time assumes a particular roll-out of certain modules. In this research, the nature of ERP institutionalisation will be studied based on the modules which are already go-live and institutionalised at the time that this study is carried out.

INSTITUTIONAL LOGICS

Institutionalisation of technology is focused on macro as well as micro level. At the macro level, coercive, normative, and mimetic are three environmental institutional mechanisms (or institutional effects) through which organisations shape, maintain, and transform their social rules, ideals, and practices. At the micro-level, institutionalised behaviour is generated through the gradual embedding of technology in the habits and routines of employees in an organisation which is concerned with the emergence of shared meanings and patterns of behaviour. This behaviour is constructed socially and becomes stabilised over time (Powell and Colyvas 2008). For example, Baptista (2009) used theories such as background expectation and constitutive expectations to explain the micro institutional elements engaged in institutionalisation of intranet technology, such as familiarity, usefulness, governance structure, senior support, and business alignment. The macro level has more emphasis on achieving legitimacy as an explanation for the success and survival of organisations (Suchman 1995; Barley 2008; Deephouse and Suchman 2008), whereas micro level logics and activities aim to direct organisations to experience efficiency and performance in technology institutionalisation (Orlikowski 2007; Thornton and Ocasio 2008). In contrast with the significant effort to study institutional theory and institutionalisation process at macro level (e.g., Teo *et al.* 2003; Liang *et al.* 2007; Mignerat and Rivard 2009; Zheng *et al.* 2013), little attention has been given to address micro processes of mutual transformation between technology and its hosting organisation (Thornton *et al.* 2012).

The institutional logics concept has emerged as part of the development of institutional theory since 1980s and can be utilised as both a meta-theory and a method of analysis (Friedland and Alford 1991; Scott *et al.* 2000; Thornton and Ocasio 1999, 2008; Greenwood *et al.* 2010; Thornton *et al.* 2012). Friedland and Alford (1991) suggest a meta-theory of institutions that includes individuals and organisations, instead of a theory of environmental effects on organisations. Institutional logics approach has the capacity to motivate and guide research questions at the both micro and macro level of analysis. In fact, micro processes of change are built from translations, analogies, combinations, and adaptations of macro institutional logics (Thornton *et al.* 2012, p.4). It, thus, can make headway in addressing several limitations addressed by scholars of institutional theory and brings new theoretical and methodological contributions to the analysis of institutions in IT/IS adoption, implementation, use, acceptance, and routinisation (Scott *et al.* 2000; Thornton and Ocasio 2008). Institutional logics open up new debates about activities and events at 'micro' level in institutionalism which addresses issues of agency, materiality and contingency. For example, scholars such as Orlikowski (2007) believe that organisational practices need to be viewed as 'sociomaterial' and suggests the perspective of constitutive entanglement (i.e., the inextricable relationship between humans and technology) within an organisation. She provides a practical example of information search in Google to show how the resulting sociomaterial assemblage that delivers search results to a researcher (through temporarily binding together a heterogeneous assembly of distributed agencies) is both emergent and contingent.

The concept of institutional logics comprises of five principles i.e., 1- embedded agency, 2- society as inter-institutional system, 3- institutions as material and symbolic, 4- institutions at multiple levels of analysis, and 5- historical contingency. These principles highlight some gaps in institutional theory which will be discussed in the next section. The first principle, i.e., embeddedness of agency assumes that values, assumptions, interests, and identities of individuals and organisations are embedded within the prevailing institutional logics and provide explanation for social structure or action. Individuals, organisations and institutions are all embedded and interrelated. In these circumstances, when organisations and institutions characterise progressively, higher levels of opportunity and constraint for individual action are available (Thornton and Ocasio 2008; Greenwood *et al.* 2010; Lawrence *et al.* 2011; Alter 2013). The second principle conceptualises society as an inter-institutional system which allows sources of heterogeneity and agency to be observed from the contradictions between the logics of different institutional orders. In fact, institutional logics approach views any context as potentially influenced by contending logics of different societal sectors, instead of positing homogeneity and isomorphism in organisational fields (Scott *et al.* 2000). The third principle views institutions as material and argues that each of institutional orders in society has both material and cultural characteristics (Friedland and Alford 1991; Orlikowski 2007). As a result, institutions develop and change as a result of the interplay between both of privileging material and cultural explanations of institutions (Thornton 2002; Lawrence *et al.* 2011). The fourth principle posits that institutional logics approach allows for a wide variety of mechanisms to be emphasised in research and theoretical development across multiple levels of analysis such as organisations, markets, industries, inter-organisational networks, geographic communities, and organisational fields (Scott *et al.* 2000; Greenwood *et al.* 2010). Finally, the fifth principle emphasises the importance of historical change (such as various stages of ERP assimilation) in understanding the patterns of power and control in organisations (Thornton and Ocasio 1999; Pollock and Williams 2008). For example, Pollock and Williams (2008) identified the social spaces in which innovation occurs, including the specific arenas in which technologies are developed and implemented (multi-local spaces and multiple timeframes), and broader linkages across this heterogeneous community, i.e., the coupling of a technological field and a societal practice.

GAPS IN INSTITUTIONAL THEORY

Current views of institutional theory suffer from some drawbacks and gaps. In fact, the definition and use of institutional theory in IS research has lacked coherence, and much of what is called institutional theory in contemporary literature is not very institutional at all (Thornton and Ocasio 2008). It is more about resource dependencies, social movements, political struggles, and other non-institutional forces driving institutional change and isomorphism (Lawrence *et al.* 2011; Thornton *et al.* 2012). In previous sections, an in-depth review of existing literature on institutionalism was provided. The concept of institutional logics and its five principles shed light to some gaps in the literature of institutional theory and its application in IT/IS planning, adoption, utilisation, and maintenance. Table 1 summarises our findings of some theoretical and practical gaps in institutional theory and their related research questions. These gaps are explained in the rest of this section. We believe that studying these gaps is critical, because filling these gaps help organisations to experience more successful results from their technology implementations. In fact, extended aggregated view of institutional theory proposed in this research has more promise for the success, acceptance and survival of technology implementations in contemporary business organisations than the views suggested before.

The first gap emphasises the importance of bringing macro and micro institutional logics together. As discussed earlier, although institutional theory is a broad perspective which moves from macro (environmental) to micro (organisational and interpersonal) level of analysis, it primarily remains a macro theory. In another words, while there is a growing interest in the IS field on processes of institutionalisation, the focus has tended to be on institutional dimensions at the macro level. Micro-level approaches to institutions and to the process of institutionalisation have only recently become more main stream in academic research (Orlikowski 2007; Thornton and Ocasio 2008; Pollock and Williams 2008; Powell and Colyvas 2008; Baptista 2009; Thornton *et al.* 2012; Alter 2013). In line with this argument, Powell and Colyvas (2008) also contend that *'In our view, macro lines of analysis could profit from a micro motor. Such a motor would involve theories that attend to enactment, interpretation, translation, and meaning. Institutions are sustained, altered, and extinguished as they are enacted by individuals in concrete social situations'*.

The second gap utilises the literature on institutional perspective and argues that organisations may fail to realise significant benefits from their IT innovations because they have been adopted to satisfy policies, resource dependency needs, and professional industry trends. As has been noted before, the main issue of adopting such this view is its restricted emphasis on fulfilling legitimacy needs rather than proposing efficiency and value to the organisation and its working processes (Swanson and Ramiller 2004; Mignerat and Rivard 2009; Greenwood *et al.* 2010; Lawrence *et al.* 2011). According to Suchman (1995) *"Legitimacy is a generalised perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions."* In fact, legitimation is the process wherein an organisation

justifies to a peer or external entity that it is right to exist. Legitimacy as the fundamental cornerstone of institutional theory, thus, may not necessarily entail achieving efficiency, performance and consequently success from assimilating and institutionalising a technological innovation (Thornton and Ocasio 2008). In line with this argument, Scott (2008) also posited that organisations are not passive pawns controlled by the demands of their environments, but are active players, capable of responding strategically and innovatively to environmental pressures. Therefore, the IS literature on institutional theory can be criticised for its limited view to efficiency and value in technology institutionalisation and lack of critically assessing various influencing institutional elements on the process of IT/IS institutionalisation in order to achieve both efficiency and legitimacy.

Finally, the last gap highlights the role of ‘culture’ and ‘cultural influence’ in the success of technology institutionalisation. Cognition is introduced as one of the pillars of defining institutions in institutional theory (through defining cognitive mimetic forces). However, the predominant views in IS literature treated cognitive aspects of technology as a material resource influencing organisation at macro level. Nevertheless, culture needs to be treated as something agencies and/or institutional entrepreneurs strategically use, deploy, and mobilise. In fact, all structural, symbolic, and normative components of culture are required to be incorporated to be representative of both motivation as well as a justification of action (Orlikowski and Barley 2001; Thornton 2002; Orlikowski 2007; Powell and Colyvas 2008; Thornton *et al.* 2012; Alter 2013).

Table 1. Gaps in Institutional Theory- Literature Review

Gaps	Research Questions
The need to bring macro and micro level of institutional theory together	How IT/IS (e.g., ERPs) become institutionalised through interaction of macro and micro institutional mechanisms?
Achieving efficiency as an explanation for the success and survival of organisations in addition to legitimacy	How different institutional mechanisms facilitate legitimisation, efficiency and success of IT/IS (in particular, ERP) institutionalisation?
Limited perspective to the concept of culture in institutional theory	How internal organisational culture influences interactions of users with technology (e.g., motivate their desire to use ERP or justify their resistant towards using it)?

PRIMARY RESEARCH FRAMEWORK

As discussed earlier, the institutional logics approach provides an important remedy to the theoretical drifts away from institutional effects of technology by emphasising how cultural, social, technological and other dimensions of institutions both enable and constrain social actions towards widespread use of major technologies like ERPs in organisations. This approach helps in locating individual and organisational behaviour in the ‘sociomaterial’ context of ERP institutionalisation which directs this research to answer its main question, i.e., ‘what different institutional mechanisms and logics (at macro and micro levels) in addition to environmental institutional mechanisms cause ERP institutionalisation to be successful and efficient?’. In fact, by bringing macro and micro levels of institutional theory together through utilisation of institutional logics concept, this research is able to explain how individuals produce and reproduce their material subsistence, and provide meaning to their everyday social life (Powell and Colyvas 2008; Lawrence *et al.* 2011; Thornton *et al.* 2012).

IS literature suggests that organisations become more efficient when IT innovations become routinely integrated into work practices, or institutionalised (Purvis *et al.* 2001; Liang *et al.* 2007; Baptista 2009; Saraf *et al.* 2013). In fact, the major part of business value from implementation and assimilation of IT/IS will only be available when its implicit functionality is fully assimilated and institutionalised within the ongoing actions of individuals and teams. However, there is little attention paid to the properties of institutionalised technology and the non-environmental mechanisms which are influencing an IT innovation to become institutionalised (such as human agency, management support, technological alignment, culture, and language). As a result, this research utilises the institutional logics concept which draws the attention of decision makers to technological solutions which are aligned with prevailing logics through a variety of organisational and technological institutional mechanisms (Thornton and Ocasio 2008). These mechanisms can further lead to the stability of organisational structures, cultural affinity, responsiveness, authority, efficiency, and performance.

This review leads us to new insights about various institutional logics that influence the institutionalisation of information systems in organisations. These insights shape the preliminary framework for doing this research [as illustrated in figure 1]. The proposed framework treats ERPs as work systems rather than material artefacts and aims to study various technical and non-technical institutional mechanisms which are influencing the process of ERP assimilation and institutionalisation through the lenses of institutional theory [at micro as well as macro level of analysis] and technology-organisation-environment (TOE) framework (Tornatzky and Fleischer 1990).

TOE framework suggests that adoption, implementation, and assimilation of technological innovations are influenced by the technological, organisational, and environmental context of the organisation. The extent IS literature has highlighted the importance of merging ideas of these two well-known theories in studying IT/IS implementation (Gibbs and Kraemer 2004; Soares-Aguiar and Palma-Dos-Reis 2008). This research brings together various dimensions of TOE framework with the concept of institutional logics in order to fill the gaps in institutional theory. The merging of these two theories has the capability to fill these gaps, since technological and organisational dimensions suggested in TOE framework allows this research to bring micro institutional logics derived from these two dimensions in congruous with environmental institutional mechanisms at macro level. This framework aims to provide guidelines for ERP-adopting organisation (in general, for organisations who intend or have already adopted any information systems) to achieve successful results and to minimise project risks and failures. The potential outcomes of interactions between technological, organisational, and environmental institutional mechanisms can help managers set proper strategies through various stages of institutionalisation process to achieve legitimacy, success, efficiency, and IS infrastructure stability.

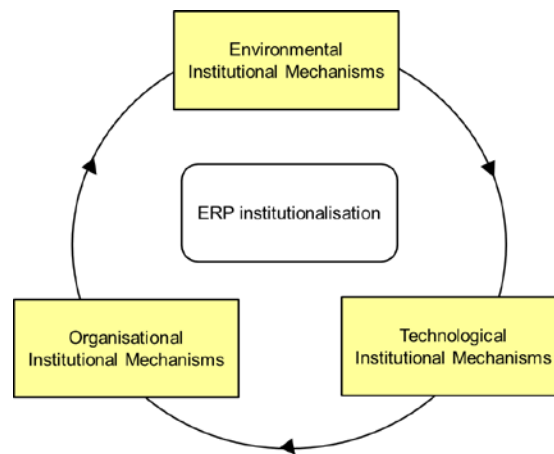


Figure 1: Research Framework [developed for this research]

RESEARCH METHODOLOGY

This study adopts a critical realism philosophy and uses a mixed methods approach which includes both explanatory case studies and a survey. Critical realism (hereafter called CR) licenses and underpins the idea of combining different research methods, which involves the use of both qualitative and quantitative methods in the same research endeavour (Venkatesh *et al.* 2013; Zachariadis *et al.* 2013). The CR-based explanatory case study has the potential of exposing specific causal factors (in this research, various institutional mechanisms) inherent in a particular structure, group of actors, and setting, that are capable of bringing about the phenomena of interest (i.e. ERP institutionalisation) (Wynn and Williams 2012). The design of this research is governed by the eight step process of building theory from case study research suggested by Eisenhardt (1989). The first aspect of this design deals with defining research questions, which in this research is 'what different institutional mechanisms and logics (at macro and micro levels) in addition to environmental institutional mechanisms cause ERP institutionalisation to be successful and efficient?' The second aspect of case study research design deals with case selection (Eisenhardt 1989). This research was conducted in four large Australian ERP-adopting organisations that have both success and failure stories to share (i.e. purposeful sampling vs. random sampling). It is also noteworthy that success in this research is defined as when an organisation moves through various stages of ERP assimilation with success and as a result, ERP become routinised, stabilised, ingrained, and fully assimilated. This state is called 'ERP institutionalisation' or an institutionalised ERP system.

The third aspect is crafting case study protocol which includes multiple data collection methods in order to obtain a synergistic view of meta-inferences, i.e., the theoretical statements, narratives, or a story inferred from an integration of findings from quantitative and qualitative strands of mixed methods research (Venkatesh *et al.* 2013). This research triangulates data from various sources, such as semi-structured interviews, a survey, and organisational documents. Each semi-structured interview session, taking between 75 and 120 minutes, comprised of 16 questions categorised into three groups relating to ERP pre-implementation, implementation, and post implementation. Survey instrument is the second main source of gathering data in this research which is distributed either personally or electrically. Case participants were selected from various managerial layers such as enterprise architect, project director, architecture manager, solution centre manager, business analyst, systems developers, business managers, IT change managers, and other system users.

Retroduction is the key methodology for analysing the data gathered through case studies in this research (data analysis). It is an iterative process of working backward from the observed empirical events to the underlying mechanisms that could logically have produced those events (Bhaskar 1975; Volkoff *et al.* 2007; Wynn and Williams 2012). The gathered data is analysed and validated using frameworks suggested by Zachariadis *et al.* (2013) and Venkatesh *et al.* (2013). The qualitative data collected has been analysed using NVivo software. The analysis of quantitative data was guided by statistical techniques such as factor analysis and regression methods. In the next section, an illustrative case study of a large utility organisation in Australia (i.e., referred to as case A) is provided. This case aims to demonstrate some of our preliminary results of the interplay between environmental, organisational and technological aspects of ERP institutionalisation and how such these interactions led to experiencing success and failure in this organisation. The within-case analysis of case A helps us to demonstrate how this research might theoretically and practically contribute to the IS literature (the final evaluation of the framework is yet to be completed).

ILLUSTRATIVE CASE STUDY

Case A is one of the state's largest organisations, employing more than 2,000 people throughout metropolitan and regional areas. This organisation embarked upon implementing SAP ERP in late 1990s after privatisation of electricity market in Australia. Implementation of SAP in case A was a success, since this organisation has achieved routinised fully assimilated ERP, in almost every aspect of its business function. In the rest of this section, we aim to answer the main question of this research, i.e., 'what are different institutional mechanisms (in particular, organisational and technological dimensions) in addition to environmental institutional mechanisms which have influenced ERP institutionalisation success at case A?'.

The retroduction process is utilised to find environmental, organisational and technological components, structures, and actions from empirical observable events. In doing so, causal explanations of how and why 'case A' has experienced success/failure through various stages of ERP institutionalisation and how it achieved efficiency, performance and stability in institutionalising SAP ERP system are elaborated. The within-case analysis of this organisation aims to explicate events and structures through *abstraction* of complex events from empirically observed events. In the process of abstraction, four steps were taken, 1- map resources to the relevant NVivo nodes (a total of 9 nodes were created demonstrating environmental, organisational, and technological mechanisms through the pre-implementation, implementation and post- implementation stages); 2- explication of events and structures including details of actions, outcomes, and components; 3-use the 'Word Frequency' tool of NVivo software and try to find the most frequent terms used for each of the environmental, organisational and technological aspects (considering all the actions, outcomes, and components at various stages of assimilation process). The goal is to find emerging themes under each of these broad categories; and 4- explain how various emerging themes under TOE framework (technology, organisation, and environment) interact with each other and why these interactions are important in achieving fully assimilated or institutionalised ERP. A total of 55 resources for environmental aspects, 161 for organisational aspects, and 162 for technological aspects were retrieved. The following items explain the result of step 2, i.e., explication of events and structures including details of key actions, outcomes, and key components, and step 3, i.e., finding emerging themes under each of these areas using 'Word Frequency' tool of NVivo software,

- The main environmental components are professional state/utility industry norms, government regulations/standards, customers, and conferences. The key action is 'follow forces', and the key outcome is to be legitimate (survival and reputation were also mentioned).
- The main organisational components are business people/system users, manager/employees/resources, and knowledge/information/experiences. The key actions are training/ involvement in/persuade system usage, sharing/exchange, and improve competencies and capabilities/ support. Finally, the key outcomes are social/cultural acceptance/ positive attitudes, responsiveness and organisational learning, and efficient organised resources (e.g., economic and IS infrastructure).
- The main technological components retrieved are quality/benefits/assessment, standards/ integration, and business objectives/directions. The key actions are assessing system quality/ benefit realisation, business process reengineering (BPR)/customisation; and sticking to regular standardised governance processes. Finally, the key outcomes are control net benefits/ intuitive, task/technology alignment; and technology standardisation/routinisation.

Step 4 of within-case analysis provides an in-depth causal analysis of emerging themes which helps to draw clearer links between components and events influencing ERP assimilation and institutionalisation and its success/failure outcomes. New chains of thought emerged during this step. For example, although case A considered the best practices of its business peers and external partners (who were perceived as being successful), it has not copied/mimicked their system analysis, design, development, and maintenance procedures.

In fact, case A is not pursuing superior technologies which are perceived to be accurate and legitimate. Instead, it carefully assesses/reassesses the quality of technological innovations and approves them if their benefits are aligned with the goals and future directions of this organisation (i.e. keeping the lights on). The above example illustrates how environmental aspects interact with technological aspects (e.g. system quality, benefit realisation) and in this process achieves a sophisticated set of net benefits in addition to legitimacy. Another example of importance of interactions between environmental aspects with other organisational and technological components was highlighted by a senior business analyst who explained how her organisation treated coercive forces as an opportunity to improve its IT infrastructure and be more responsive (through sharing and transferring knowledge/experiences with other electricity industry partners and peers), instead of merely following coercive regulations because of dependency forces.

Looking at how interaction of themes under technological aspects leads to higher levels of efficiency and performance at case A, SAP configuration analyst contended that *“technology integration is one of the main benefits this organisation is constantly assessing through post-implementation evaluation procedures. Nevertheless, integration can turn into a burden to implementation success and may lead to lack of acceptance, if it is pushed instead of being pulled into business tasks”*. This example explains how insufficient interplay between two technological mechanisms (i.e., technology integration and system quality assessment) resulted in case A experiencing difficulty. Another example is provided by a solution architect in regards to interactions between organisational mechanisms (i.e., efficient organised resources and knowledge sharing/exchange). He believes that utilising SAP helped this organisation to improve economic fitness through building cost/budget control mechanisms. However, he emphasised that effective resource utilisation and asset specificity depends on proper use of business/data warehouse to extract knowledge at enterprise level and produce definitive revenue management procedures. Furthermore, the within-case analysis of case A revealed that various organisational and technological aspects need to interact with each other in an organised fashion in order to have successful SAP assimilation and institutionalisation. For example, the SAP domain architect asserted that commitment and support of managers (organisational aspect) will lead to full utilisation of SAP if technology features are aligned with business tasks and processes (technological aspect). Finally, SAP basis IT manager of this organisation provided an interesting example of interplay between different themes. He believed that internal and external knowledge exchange activities (organisational aspect) helped case A to transform its IT quality assessment procedures (technological aspect) to more productive ones which took social and cultural drivers into consideration as well (another organisational aspect). At the same time, case A employed the acquired knowledge in later releases of other SAP modules to increase alignment between SAP ERP systems and business tasks (another technological aspect).

The result of within-case analysis of case A leads us to believe that SAP ERP system was institutionalised in this organisation through network of interaction between TOE components, events, and structures. In doing so, organisation A was able to gain legitimacy due to conforming to macro institutional mechanisms (in this case, coercive and normative forces). However, the major part of SAP success in case A lies in its abilities to bring organisational and technological aspects (micro institutional logics) into congruence with environmental aspects and in this process achieve social/cultural acceptance, responsiveness, quality, technology standardisation, standardised resources, and task/technology alignment. In addition, case A constantly harnessed different functions of the organisation, appropriately utilised organisational resources, and integrated its business operations to seek economic efficiency and ensure SAP continued usage and IT infrastructure stability. At the same time, through the course of ERP implementation project, major efforts were put into standardised infrastructure across the network. This allowed streamlining case A's asset portfolio and ensured more gradual approach to the maintenance and construction of the distribution network.

CONCLUSIONS AND FUTURE ROADMAP

The purpose of this paper is to shed light on some major drawbacks in the application of institutional theory in IT/IS implementation, assimilation and institutionalisation. Through this paper, first, an in-depth review of extent IS literature was disused. This led us to find two main streams in the literature of institutional theory. The first stream mainly treats institutional theory as a macro theory (particularly through studying regulative, cognitive and normative logics), whereas the second stream takes into account micro institutional logics underlying technology institutionalisation process (e.g., through studying issues like agency, historical contingency, culture, and materiality). The critical analysis of these literatures directed this research towards finding some gaps in institutional theory, such as lack of bringing macro and micro institutional logics together, lack of studying the concept of 'success' in IS adoption through the lens of micro institutional logics as well as conflux account of macro and micro aspects, and lack of considering all structural, symbolic, and normative components of culture. We argued that careful utilisation of the concept of 'institutional logics' can help contemporary business organisations to experience more successful results from their technology implementations and institutionalisation (such as ERP systems).

The primary framework suggested in this research utilises institutional theory in conjunction with TOE framework and posited that adoption, implementation, use, acceptance, and maintenance of major technological platforms like ERP systems are influenced by the values and interests of various environmental, technological and organisational institutional logics within the context of their planning, development, deployment, utilisation and maintenance. Institutionalisation of ERP in an organisation is extremely complex, since this technology can affect nearly every aspect of organisational performance and functioning. Measures of ERP system success must, therefore, reflect this fact. Methodologically, this study adopts a critical realism-based mixed method. This paper concluded with an illustrative case study to provide an empirical understanding of discussions provided throughout paper. The key findings presented in this paper, however, are preliminary and further empirical work that directly applies the proposed theoretical framework is required to substantiate these key findings. Therefore, towards the next step of this research, the qualitative and quantitative inferences resulted from causal analysis of four Australian organisations will be triangulated, analysed and validated using CR-based methodological principles, i.e., retrodution and empirical corroboration.

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